

Claims

1. A connecting device for a medical system comprising a first subsystem (101) having a first connection portion (4),  
5 and a second subsystem (102) having a second connection portion (5), at least one of the subsystems containing a fluid, the connecting device (20) being adapted to connect the subsystems (101, 102) to each other to permit transport of the fluid from at least one of the subsystem to the other  
10 subsystem,

the device (20) comprising a container (21) enclosing an inner space, the container (21) being adapted to receive the first connection portion (4) and the second connection portion (5) in the inner space,

15 characterised in that the device comprises a mechanism adapted to permit a user of the device to accomplish, from outside the container (21), said connection of the first connection portion (4) and the second connection portion (5) to each other in the inner space.

20 2. A device according to claim 1, characterised in that said mechanism is adapted to permit the user to accomplish, from outside the container (20), a disconnection of the first connection portion (4) from the second connection portion (5) after said connection has been accomplished.

25 3. A device according to any one of claims 1 and 2, characterised in that the device comprises means (26 - 29) for providing a substantially sterile atmosphere in the  
30 inner space.

4. A device according to claim 3, characterised in that said means (26-29) comprises a channel (27) permitting an inward flow of a clean gas into the inner space.

5. A device according to claim 4, characterised in that said means (26-29) comprises a filter (28) arranged in said channel for filtering the gas before the gas enters the inner space.

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6. A device according to any one of claims 4 and 5, characterised in that said means (26-29) comprises a flow generator (26) for providing said inward gas flow through the channel (27).

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7. A device according to claim 6, characterised in that the flow generator is adapted to maintain an overpressure in the inner space of the container (21).

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8. A device according to any one of claims 3 to 7, characterised in that said means (26-29) includes a disinfectant member (29) for supplying a disinfectant agent into the inner space of the container (21).

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9. A device according to any one of the preceding claims, wherein at least one of the first connection portion (4) and the second connection portion (5) is associated with a protecting end cap (17, 18), characterised in that the mechanism is arranged to permit removing of the end cap (17, 25) from the associated connection portion (4, 5) prior to said connection.

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10. A device according to claims 2 and 9, characterised in that the mechanism is arranged to permit attachment of the end cap (17, 18) to the associated connection portion (4, 5) after said disconnection.

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11. A device according to any one of the preceding claims, characterised in that the container (21) is openable to an open state to give access to the inner space and to permit

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the introduction of the first connection portion (4) and the second connection portion (5) in the inner space.

12. A device according to claim 11, characterised in that  
5 the container (21) comprises a base member (22) and an openable cover (23).

13. A device according to any one of the preceding claims,  
characterised in that the device comprises  
10 a first receiving member (41) arranged in the inner space for receiving and holding the first connection portion (4) in an initial position,  
a second receiving member (42) arranged in the inner space for receiving and holding the second connection portion (5)  
15 in an initial position,  
wherein said mechanism is adapted to move at least one of the first receiving member (41) and the second receiving member (42) in such a manner that the first connection portion (4) and the second connection portion (5) are  
20 connected to each other in said inner space.

14. A device according to any one of the preceding claims, wherein the first connection portion (4) is associated with a first end cap (17) for protecting the first connection portion (4), and the second connection portion (5) is associated with a second end cap (18) for protecting the second connection portion (5), characterised in that the mechanism is arranged to permit removing of the first end cap (17) from the first connection portion (4) and the second end cap (18) from the second connection portion (5) prior to said connection.

15. A device according to claim 14, characterised in that the first receiving member (41) is arranged to engage simultaneously the first connection portion (4) and the second end cap (18), and that the second receiving member

(42) is arranged to engage simultaneously the second connection portion (5) and the first end cap (17).

16. A device according to any one of the preceding claims,  
5 characterised in that the mechanism comprises a first manoeuvering member (35) and a second manoeuvering member (36).

17. A device according to claims 15 and 16, wherein the  
10 first end cap (17) is screwed onto the first connection portion (4) and the second end cap (18) is screwed onto the second connection portion (5), characterised in that the second manoeuvering member is arranged to rotate, at the initial position, one of the first end cap (17) and the  
15 first connection portion (4) to release the first end cap (17) from the first connection portion (4), and one of the second end cap (18) and the second connection portion (5) to release the second end cap (18) from the second connection portion (5).

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18. A device according to claim 17, characterised in that the first manoeuvering member (35) is arranged to move, at the initial position, at least one of the first receiving member (41) and the second receiving member (42) away from  
25 each other for completing the removing of the first and second end caps (17, 18) from the respective connection portions (4, 5).

19. A device according to claim 18, characterised in that  
30 said moving of at least one of the receiving members (41, 42) at the initial position comprises a movement along a substantially longitudinal primary direction (x).

20. A device according to any one of claims 16 to 19,  
35 characterised in that the second manoeuvering member (36) is arranged to move one of the first receiving member (41) and

the second receiving member (42) from the initial position to a connection position.

21. A device according to claims 18 and 20, characterised in that the second manoeuvering member (36) is arranged to perform said moving of one of the receiving members (41, 42) to the connection position after said complete removing of the end caps (17, 18) from the respective connection portion (4, 5).

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22. A device according to any one of claims 20 and 21, characterised in that said moving of one of the receiving members (41, 42) to the connection position comprises a movement along a substantially longitudinal secondary direction (y).

15 23. A device according to claims 19 and 22, characterised in that said primary direction (x) is substantially perpendicular to said secondary direction (y).

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24. A device according to any one of claims 19 to 23, characterised in that the first manoeuvering member (35) is arranged to move, at said connection position, at least one of the first receiving member (41) and the second receiving member (42) along a longitudinal direction being parallel to the primary direction (x) in such away that the first connection portion (4) engages the second connection portion (5).

25 30 25. A device according to claim 24, characterised in that the second manoeuvering member (36) is arranged to rotate, after said moving at the connection position, one of the first connection portion (4) and the second connection portion (5) to secure the connection of the first connection portion (4) to the second connection portion (5).

26. A device according to any one of claims 16 to 25, characterised in that the first manoeuvering member comprises a grip portion (35) provided outside the container (21) to be engageable by a person using the device.

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27. A device according to any one of claims 16 to 26, characterised in that the second manoeuvering member comprises a handle (36) provided outside the container (21) to be engageable by a person using the device.

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28. A device according to any one of the preceding claims, characterised in that the first subsystem (101) comprises a dialysis liquid container (1, 2) and the second subsystem (102) comprises a catheter adapted to be operably partially disposed in a patient extending into the abdominal cavity (8), the catheter forming the second connection portion.

29. A medical system comprising:

a first subsystem (101) having a first connection portion (4);

a second subsystem (102) having a second connection portion (5), at least one of the subsystems containing a fluid; and a connecting device (20) being adapted to connect the subsystems (101, 102) to each other to permit transport of the fluid from at least one of the subsystem to the other subsystem,

the connecting device (20) comprising a container (21) enclosing an inner space, the container (21) being adapted to receive the first connection portion (4) and the second connection portion (5) in the inner space,

characterised in that the device comprises a mechanism adapted to permit a user of the device to accomplish, from outside the container (21), said connection of the first connection portion (4) and the second connection portion (5) to each other in the inner space.

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30. A medical system comprising:

a first subsystem (101) having a first connection portion (4);

a second subsystem (102) having a second connection portion

5 (5), at least one of the subsystems containing a fluid; and  
a connecting device (20) being adapted to connect the  
subsystems (101, 102) to each other to permit transport of  
the fluid from at least one of the subsystem to the other  
subsystem,

10 the connecting device (20) comprising a container (21)  
enclosing an inner space, and means (26-28) for providing a  
substantially sterile atmosphere in the inner space, and  
the container (21) being adapted to receive the first  
connection portion (4) and the second connection portion (5)

15 in the inner space,

characterised in that the device (20) comprises the features  
defined in any one of claims 1 to 26.

31. A medical system according to any one of claims 29 and

20 30, characterised in that the first subsystem (101)  
comprises a dialysis liquid container (1, 2) and the second  
subsystem (102) comprises a catheter adapted to be operably  
partially disposed in a patient extending into the abdominal  
cavity (8), the catheter forming the second connection  
25 portion (5).

32. A medical system according to any one of claims 29 to

31, characterised in that the medical system is a system for  
peritoneal dialysis, for infusion of a infusion solution

30 and/or for infusion of a blood product.

33. A method for connecting in a medical system a first  
subsystem having a first connection portion and a second  
subsystem having a second connection portion to each other,

35 wherein at least one of the subsystems contains a fluid,  
the method comprising the steps of:

providing a container enclosing an inner space,  
introducing the first connection portion and the second  
connection portion into the inner space,  
accomplishing from outside the container by means of a  
5 mechanism said connection of the first connection portion  
and the second connection portion to each other in the inner  
space to permit transport of the fluid from at least one of  
the subsystem to the other subsystem.

10 34. A method according to claim 33, comprising the further  
step of:

accomplishing from outside the container by means of said  
mechanism a disconnection of the first connection portion  
from the second connection portion after said connection has  
15 been accomplished.

35. A method according to any one of claims 33 and 34,  
comprising the further step of:  
providing a substantially sterile atmosphere in the inner  
20 space.

36. A method according to claim 35, comprising the further  
step of:  
providing via a channel an inward flow of a clean gas into  
25 the inner space.

37. A method according to claim 36, comprising the further  
step of:  
filtering the gas before the gas enters the inner space.

30 38. A method according to any one of claims 33 to 37,  
comprising the further step of:  
supplying a disinfectant agent into the inner space.

35 39. A method according to any one of claims 33 to 38,  
wherein at least one of the first connection portion and the

second connection portion is associated with a protecting end cap, the method comprising the further step of: removing of the end cap from the associated connection portion prior to said connection.

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40. A method according to claims 34 and 39, comprising the further step of:  
attaching the end cap to the associated connection portion after said disconnection.

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41. A method according to any one of claims 33 to 40, comprising the further steps of:  
opening the container,  
introducing the first connection portion and the second  
15 connection portion in the inner space  
positioning the connection portions in the inner space, and  
closing the container.

42. A method according to claim 41, wherein said  
20 positioning comprises steps of:  
positioning the first connection portion in a first receiving member in an initial position in the inner space;  
positioning the second connection portion in a second receiving member in an initial position in the inner space;

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43. A method according to claim 42, wherein said connection comprises step of:  
moving at least one of the first receiving member and the second receiving member to a connection position to  
30 accomplish said connection.

44. A method according to any one of claims 33 and 43, wherein the first connection portion is associated with a first end cap for protecting the first connection portion,  
35 and the second connection portion is associated with a

second end cap for protecting the second connection portion, the method comprising the step of:

removing of the first end cap from the first connection portion and the second end cap from the second connection portion prior to said connection.

45. A method according to claims 42 and 44, wherein the first end cap is screwed onto the first connection portion and the second end cap is screwed onto the second connection portion, the method comprising the steps of:

rotating, at the initial position, one of the first end cap and the first connection portion to release the first end cap from the first connection portion,

rotating, at the initial position, one of the second end cap and the second connection portion to release the second end cap from the second connection portion, and

moving, at the initial position along a longitudinal primary direction, at least one of the first receiving member and the second receiving member away from each other for completing the removing of the first and second end caps from the respective connection portion.

46. A method according to any one of claims 42 to 45, comprising the steps of:

25 moving along a longitudinal secondary direction at least one of the first and second receiving members from the initial position to a connection position after said complete removing of the end caps from the respective connection portion.

30 47. A method according to claim 46, comprising the step of: moving, at said connection position, at least one of the first receiving member and the second receiving member along a longitudinal direction being perpendicular to the secondary direction in such away that the second end portion engages the first connection portion.

48. A method according to claim 47, comprising the step of: rotating, after said moving at the connection position, one of the first receiving member and the second receiving  
5 member to secure the connection of the first connection portion to the second connection portion.

49. A method according to any one of claims 33 to 48, wherein the first subsystem comprises a dialysis liquid container and the second subsystem comprises a catheter adapted to be operably partially disposed in a patient extending into the abdominal cavity, the catheter forming the second connection portion.  
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15 50. A method according to claim 49, wherein the medical system is a system for peritoneal dialysis, for infusion of a infusion solution and/or for infusion of a blood product.